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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,494	10/27/2003	Masaru Ishikawa	US01-03014	3140

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EXAMINER	
DINH, JACK	

ART UNIT	PAPER NUMBER
2873	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/693,494	ISHIKAWA ET AL.
	Examiner	Art Unit
	Jack Dinh	2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *DETAILED ACTION*.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 10 and 18, the phrase "enhanced three-dimensional impression of the two-dimensional image" renders the claims indefinite. The claimed limitation is unclear because the claimed language does not provide the conditions or requirements for an image to be called "enhance three-dimensional impression". Claims 2-9, 11-17 and 19-23 are rejected based upon the rejected base claims.

Regarding claims 7, 8, 16 and 17, the phrase "heighten impression" renders the claims indefinite. The claimed limitation is unclear because the claimed language does not provide the conditions or requirements for an image to be have a "heighten impression".

Claims 2-6, 9, 11-15 and 19-23 are rejected based upon the rejected base claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clarke (US Patent 6,462,795) in view of Shanks (US Patent 4,414,565).

Regarding claim 1, Clarke (figure 1) is interpreted as disclosing an image display apparatus comprising a display **10** having an image display surface **11** which displays a two-dimensional image, and an image transmitting panel **14** spaced apart from the image display surface for creating an imaging plane **12** displaying a real image of the two-dimensional image in a space opposite to the display, wherein the image transmitting panel and the imaging plane are non-parallel with each other. Clarke is interpreted as disclosing all the claim limitations except for explicitly states that the purpose of the image transmitting panel being non-parallel to the imaging plane so that the real image displayed opposite the display has an enhanced three-dimensional impression of the two-dimensional image. Within the same field of endeavor, Shanks (figures 1 and 2c) is interpreted as disclosing the teaching that a curved or unparallel imaging plane **3** can create a three dimensional characteristics as shown in figure 2c (col. 3, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a curved or non-parallel imaging plane, for the purpose of creating a three-dimensional impression to the image.

Regarding claim 10, Clarke (figure 1) is interpreted as disclosing an image display apparatus comprising a display **10** having an image display surface **11** which displays a two-dimensional image, and an image transmitting panel **14** spaced apart from the image display surface for creating an imaging plane **12** displaying a real image of the two-dimensional image in a space opposite to the display, wherein the apparatus includes a non-parallel area (upper and lower) in which the image transmitting panel and the imaging plane are non-parallel with each other, and a parallel area (center) in which the image transmitting panel and the imaging plane are parallel with each other. Clarke is interpreted as disclosing all the claim limitations except for explicitly states that the purpose of the image transmitting panel being non-parallel to the imaging plane so that the real image displayed opposite the display has an enhanced three-dimensional impression of the two-dimensional image. Within the same field of endeavor, Shanks (figures 1 and 2c) is interpreted as disclosing the teaching that a curved or unparallel imaging plane **3** can create a three dimensional characteristics as shown in figure 2c (col. 3, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a curved or non-parallel imaging plane, for the purpose of creating a three-dimensional impression to the image.

Regarding claim 2, Clarke is interpreted as further disclosing that the image transmitting panel includes at least one micro lens board **20**, **21**, **22**, each micro lens board having an array of a plurality of micro lenses **24**, **25**, **26** arranged two-dimensionally, the micro lenses define a lens

system having a pair of convex lenses coaxial with each other, and optical axes of the lens systems are parallel with each other (col. 4, lines 33-35).

Regarding claims 3 and 12, Clarke is interpreted as further disclosing that the image display surface of the display is positioned within a focal depth of the plurality of lenses (col. 4, lines 44-61).

Regarding claims 4 and 13, Clarke in view of Shanks is interpreted as disclosing all the claimed limitations as described above, except that the image display surface of the display is positioned at a non-right angle to the optical axes of the lens systems. However, Clarke (figure 1) discloses the teaching of an angled imaging plane **12** in combination with the microlens **22** to compensate for the claimed angle. It is obvious to one or ordinary skill in the art that a display surface can be angle as desired provided that the image transparent panel is designed to compensate such modification. Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to have the display surface positioned at a non-right angle to the optical axes of the lens systems, for the purpose of creating a three-dimensional effect from angling the display surface from the optical axes of the lens system.

Regarding claims 5 and 14, Shanks (figure 2b) is interpreted as further disclosing that the imaging plane has an inclined flat shape (col. 3, lines 3-17).

Regarding claims 6 and 15, Shanks (figures 1 and 2c) is interpreted as further disclosing that the imaging plane has an inclined curved shape (col. 3, lines 3-17).

Regarding claims 7 and 16, Shanks (figures 1 and 2c) is interpreted as further disclosing that the image display surface of the display displays an image having a heightened impression of a third-dimensional perspective along an inclined direction of the imaging plane (col. 3, lines 3-17).

Regarding claims 8 and 17, Shanks (figures 1 and 2c) is interpreted as further disclosing that the image display surface of the display displays an image having a heightened impression of a third-dimensional perspective along an inclined direction of the imaging plane (col. 3, lines 3-17). Clarke in view of Shanks is interpreted as disclosing all the claimed limitations except that the image is the static image rather than a moving image. However, a moving image is only a series of static image. Therefore, the heighten impression of a third-dimensional perspective would have been the same for the moving image as that of the static image. Therefore, it would have been obvious to one of ordinary skilled in the art at the time the invention was made to use a moving image, for the purpose of creating a moving impression of a three-dimensional image.

Regarding claim 9, Clarke is interpreted as further disclosing that the apparatus includes a plurality of arrays of micro lenses connected to the image transmitting panel at a predetermined angle for creating a plurality of imaging planes (col. 4, lines 6-8).

Regarding claim 11, Clarke (figure 1) is interpreted as further disclosing that the image transmitting panel includes a micro lens board **20**, **21**, **22** having an array of a plurality of micro lenses **24**, **25**, **26** arranged two-dimensionally covering the non-parallel area and the parallel area, the micro lenses in each area together defining a lens system each having a pair of convex lenses coaxial with each other, and optical axes of the lens systems are parallel with each other (col. 4, lines 33-35).

Regarding claim 18, Clarke (figure 2) is interpreted as disclosing an image display apparatus providing an enhanced impression of an optical perspective, the apparatus comprising a micro lens array assembly comprising a plurality of convex micro lenses **20** and **21** arranged in a convex micro lenses matrix **20-30-21** to thereby form a lens system, and a display **10** located relative to the micro lens array assembly to project a two-dimensional image through the micro lens array assembly to be focused on an opposite side thereof as an imaging plane **12** (col. 4, lines 44-61). Clarke further discloses that the image transmitting panel being non-parallel to the imaging plane (see dotted line 16). Clarke is interpreted as disclosing all the claim limitations except for explicitly states that the purpose of the image transmitting panel being non-parallel to the imaging plane so that the real image displayed opposite the display has an enhanced three-dimensional impression of the two-dimensional image. Within the same field of endeavor, Shanks (figures 1 and 2c) is interpreted as disclosing the teaching that a curved or unparallel imaging plane **3** can create a three dimensional characteristics as shown in figure 2c (col. 3, lines 3-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to use a curved or non-parallel imaging plane, for the purpose of creating a three-dimensional impression to the image.

Regarding claim 19, Clarke (figure 2, not drawn to scale) is interpreted as further disclosing that the micro lens array assembly **20-30-21** comprises a micro convex lens board having two lens array halves (tiny microlenses on plate 20 and 21), each lens array half comprising a transparent flat plate **20** and **21** with a plurality of convex lenses arranged in a matrix on each flat surface thereof.

Regarding claim 20, Shanks (figure 5) is interpreted as further disclosing that the enhanced three-dimensional impression is caused by locating the micro lens array assembly 7 relative to the display **6** in an inclined orientation (col. 4, lines 20-28).

Regarding claim 21, Shanks (figure 5) is interpreted as further disclosing that the enhanced three-dimensional impression is caused by locating the micro lens array assembly 7 relative to the display **6** in an inclined orientation (col. 4, lines 20-28). Clarke in view of Shanks is interpreted as disclosing all the claimed limitations except for providing a plurality of the microlens array assemblies with corresponding displays. However, providing a plurality of sub-displays to form a large composite image would have been an obvious modification to one of ordinary skill in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to a plurality of the microlens array assemblies with

corresponding displays, for the purpose of creating a large composite image comprising a plurality of individual sub-displays.

Regarding claim 22, Shanks (figure 2b) is interpreted as further disclosing that the imaging plane has an inclined flat shape (col. 3, lines 3-17).

Regarding claim 23, Shanks (figures 1 and 2c) is interpreted as further disclosing that the imaging plane has an inclined curved shape (col. 3, lines 3-17).

Regarding claim 24, Clarke (figure 1, col. 3, line 43 – col. 4, line 31) is interpreted as disclosing a method comprising providing a micro lens array assembly comprising a plurality of convex micro lenses arranged in a matrix **20**, **21**, **22** to thereby form a lens system, and projecting a two-dimensional image through the micro lens array assembly to be focused on an opposite side as an imaging plane **12** (col. 4, lines 44-61). Clarke is interpreted as disclosing all the claim limitations except that the image is enhanced with a three-dimensional impression is caused by locating the micro lens array assembly relative to the display in an inclined orientation. Within the same field of endeavor, Shanks (figure 5) is interpreted as further disclosing the teaching that an enhanced three-dimensional impression is caused by locating the micro lens array assembly **7** relative to the display **6** in an inclined orientation (col. 4, lines 20-28). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to position the micro lens array assembly relative to the display in an inclined orientation, for the purpose of creating a three-dimensional impression to the image.

Response to Arguments

3. Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

Other Information/Remarks

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Dinh whose telephone number is 571-272-2327. The examiner can normally be reached on M-F (9:30 AM - 6:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y Epps can be reached on 571-272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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